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*The Boxelder Bug*By Edward H. Wollerman¹

CURRENT SERIAL RECORDS

The boxelder bug (*Leptocoris trivittatus* (Say)) was originally described from Missouri in 1829 under the name of *Lygaeus trivittatus*. It occurs in almost every State, as well as throughout Missouri, where it has been collected in every month of the year. At one time the species was believed to be strictly western, ranging from Missouri and Kansas west to the Pacific Ocean and from Montana south into Mexico. But in recent years it has also been found in Atlantic Coast States from New England south to North Carolina and in southwestern areas of the Province of Ontario.

The favored food plant of the boxelder bug is the boxelder tree (*Acer negundo* L.). Boxelder grows on a wide variety of sites across the United States and Canada. It is especially valued in hot and dry regions where few other trees will grow well. The boxelder bug can be expected wherever this host tree is established.

Host Trees

Although the boxelder bug feeds mainly on the female or seed-bearing boxelder tree, it has been occasionally observed feeding on maple

and ash. Where these insects are extremely numerous, they have been known to feed on strawberries, fruit on orchard trees, and on young plants.

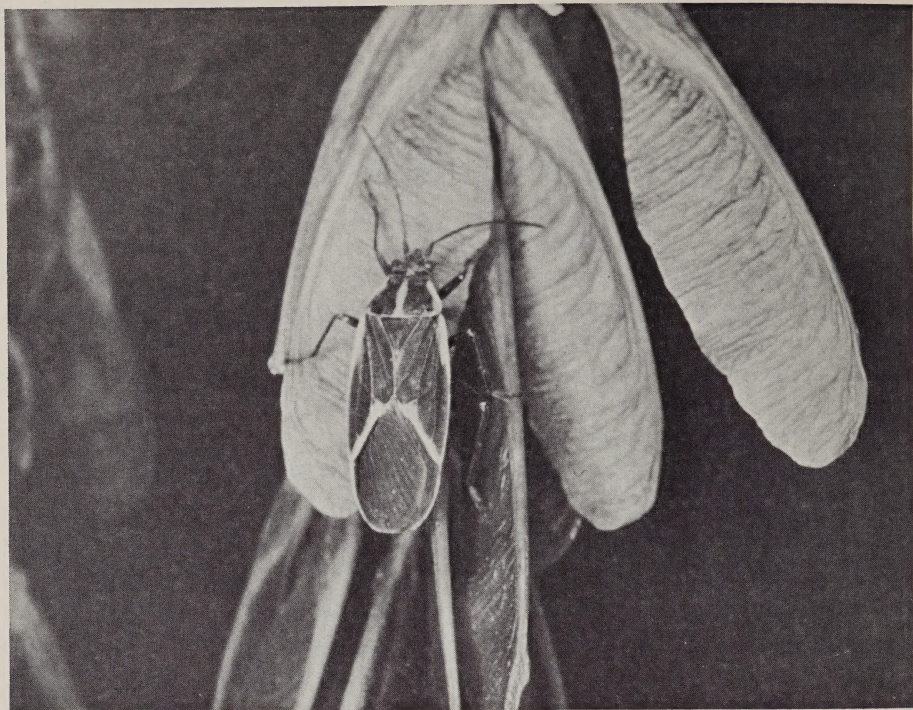
Evidence of Infestation

The boxelder bug is most troublesome as a house pest, invading homes during warm days in fall, winter, and spring. Signs of potential home infestation can be found on neighborhood boxelder trees in spring and summer. Egg clusters are not conspicuous, but the bright-red young bugs (called nymphs) are often found in groups and are evident to the casual observer. Spraying the nymphs is an effective control and makes it less likely that homes will be invaded later in the year.

Economic Importance

Trees are seldom damaged severely enough to justify control efforts. In fact the boxelder bug is listed under household insects in survey reports. The nuisance to householders is evident from their frequent requests for information on control. Because of current national emphasis on outdoor recreation and the growing number of homes and parks in sites where boxelder is among the few trees adaptable, control information will probably be in greater demand.

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Figure 1.—Adult boxelder bug on seed of boxelder (enlarged 3X).

Description

The adult insect is about $\frac{1}{2}$ inch long and brownish black (fig. 1). Back of the head, on the upper side, are three longitudinal narrow red lines. The basal half of the wings has a reddish margin. The abdomen under the wings is a bright red. Males and females are similar.

Eggs are a rusty red, ovoid, about $\frac{1}{16}$ inch long, and $\frac{1}{32}$ inch in diameter (fig. 2). They may be clustered on a flat surface or lined up in a row in a crevice. The young bugs or nymphs resemble the adults but lack wings (fig. 3). Nymphs are dark toward their heads and have bright-red abdomens. Wings develop during growth, and the change from nymph to adult is gradual.

Seasonal History

In earlier publications the boxelder bug was said to have one generation a year in the north and two in the south. Smith (1951, p. 18) observed two generations in Kansas. The first adults appeared during July, the second generation matured in early fall, and the adults overwintered. McNally has since found eggs late in June on low-growing vegetation in Ontario, Canada, but none on boxelder trees until August 15. This suggests that two generations occur more widely than was supposed, but is no more surprising than the finding of the insect in Atlantic Coast States some years after Essig in 1926 termed it "strictly western."



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Figure 2.—Eggs of boxelder bug on leaf litter of previous year (enlarged 3X).



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Figure 3.—Nymphs of boxelder bug (enlarged 3X).

In all regions, adults pass the winter in dry, sheltered places. They come out of hiding during warm winter days and retreat again when it turns cold. In spring they leave their places of hibernation and usually fly to boxelder trees where they deposit their eggs. The time varies according to climate. In Kansas it is late march or early April. Eggs may sometimes be laid under the bark or on leaves of trees other than boxelder, as well as on stones, grass, paper litter on the ground, fences, and in doorway crevices.

Although dispersal of the boxelder bug is primarily by adult flight, other means are possible. Adults have been found in a vehicle several hundred miles from where it had been parked near boxelder trees. Eggs laid on ground litter and other movable objects could also spread infestation.

The eggs hatch in 11 to 14 days. The nymphs feed by inserting their pointed beaks into leaves, fruits, or soft seeds, and sucking the plant juices. They feed all summer, become adults in the fall, and then hibernate. In some parts of the country, nymphs may become adults by midsummer and will produce a second generation that matures in the fall.

Preventive Measures

Because the boxelder bug becomes a nuisance where boxelder trees are grown, replacement with other tree species, if possible, is one method of eliminating it. Because the insect nearly always feeds on female or seed-bearing trees, retaining only

male or staminate trees would reduce its numbers.

Control

Selection of materials for control should be based on location of intended use. The insecticide to be used indoors should have low toxicity to man and should not harm furnishings; more potent chemicals may be used outdoors on trees and other plants. Oil solutions should be avoided except for use on pavement and outside walls of buildings, because the oil often injures plants.

Indoor control.—The boxelder bug is of greatest nuisance inside a building, where a household spray containing pyrethrum is recommended. Although this spray does not always kill the bugs, it paralyzes—making it possible to sweep them up for disposal with the least hazard from insecticide.

Outdoor control.—Insecticides that have been used effectively outdoors to control boxelder bugs include chlordane, lindane, and carbaryl. The first two are available commercially as emulsion concentrates or wettable powders. Carbaryl is available as a suspension. The insecticides are most effective when sprayed directly on the bugs. However, spray made from the emulsion concentrates leaves a long-lasting residue on tree trunks, walks, and foundations that will kill bugs walking on it long after application. A 2-percent oil solution of chlordane or lindane has been suggested for quick and long-lasting control of bugs on walks and buildings, but emulsion concentrates are

more commonly available, effective, and easily prepared and can be used without risk of damage to plants.

Sprays are prepared from concentrates by diluting with water as follows:

Concentrate	Spray (percent)	For 1 gallon	For 100 gallons
Carbaryl, 4 lb./gal.	0.12	2 teaspoons.	1 quart.
Chlordane, 45 percent.	2.0	10 tablespoons.	4 gallons.
Lindane, 20 percent.	0.5	¼ pint.	3 gallons.

Carbaryl is the common name of an insecticide marketed under the trade name SEVIN.² Its use creates less toxicity hazard to man and animals because its toxic character is lost in about 1 week. It can be applied close to harvest on many farm crops. Warm-blooded animals rapidly excrete carbaryl accidentally absorbed. Drift and residue problems are therefore minimized when carbaryl is used for boxelder bug control in proximity to farm animals or fish and game areas.

The short residual effect may require more applications than are required with chlordane or lindane. Though this is a disadvantage, certain situations require greater safety precautions. Each boxelder bug control area should be carefully appraised with regard to its particular problems, such as the hazard of toxic spray drift or the need for a long-lasting spray on foundations of buildings. After an insecticide is selected and obtained, the entire label on the package should be read carefully before the product is put to use.

² Mention of a trade name does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture or an endorsement by the Department over other products not mentioned.

If the chemicals mentioned are not available, other effective insecticides include DDT at 5 percent, dieldrin at 0.25 percent, or toxaphene at 2 percent. All are reported to be effective by experiment stations in several midwestern States. When boxelder bugs are present in large numbers, as in the vicinity of Washington, D.C., it may be necessary to spray twice in May and once in June, using any of the sprays mentioned.

None of the above-mentioned materials kills instantly. Usually at least an hour is required for boxelder bugs to die.

Caution: Chlordane, lindane, toxaphene, and dieldrin are poisonous materials, and care must be taken when handling them. This is particularly true for their oil solutions. However, these materials can be handled safely if the directions and precautions on the labels are followed. Wear rubber gloves. If these insecticides are spilled on the skin, wash immediately with soap and water. If any spray should accidentally strike the eyes, rinse them immediately with clean water. When applying sprays inside a building, cover all foods and avoid inhaling the mist. Be constantly alert to keep children and animals

away from spray operations, and store chemicals out of their reach.

Keep insecticides in closed, well-labeled containers in a dry place. Do not spray on windy days. Avoid drift of insecticide spray to edible plants or to water. Avoid forming spray puddles where birds and animals might drink. Rinse equipment after use, destroy empty containers, and destroy or store excess chemical safely. Do not clean spray equipment or dump excess spray material near streams or ponds.

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